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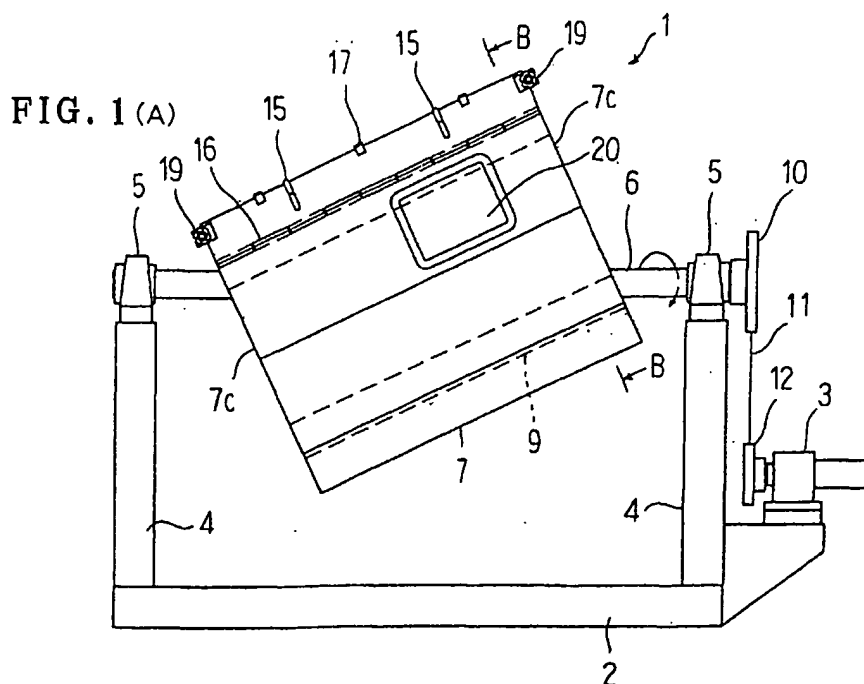
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(54) **Agitating and mixing device**

(57) The object of the present invention is to provide a device with a simple structure which can uniformly mix bulk materials.

A device comprises a rotary shaft 6 to be rotated by a driving means 3, a container outer shell 7 fixed to the

rotary shaft 6 to tilt relative to the rotary shaft 6, and an inner shell 9 fixed inside the container outer shell 7. Bulk materials are put into a receiving space 13 formed between the container outer shell and the inner shell and are then agitated and mixed.



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EUROPEAN SEARCH REPORT

Application Number
EP 02 00 6582

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 3 188 058 A (GWENNEP LOCKE HERBERT) 8 June 1965 (1965-06-08)	1,5	B01F9/06 B28C5/20
Y	* column 1, line 59 - line 14; figures 1-4 *	2,4,9	B01F9/08 B01F15/06 B01F9/00 B01F15/02 B01F15/00
Y	US 4 797 004 A (BUSCHBOM FLOYD E) 10 January 1989 (1989-01-10) * column 6, line 13 * * column 6, line 25 - column 7, line 22; figures 3,7 *	2	
Y	DE 199 03 748 A (NIJS GUIDO) 28 September 2000 (2000-09-28) * column 4, line 38 - column 6, line 61 *	4	
Y	GB 1 132 841 A (BOSTIK LTD) 6 November 1968 (1968-11-06) * page 5, line 58 - line 84; figure 5 *	9	
A	US 5 971 602 A (DORN GORDON J) 26 October 1999 (1999-10-26) * column 3, line 8 - line 26; figures 3-7 *	1,7,8	TECHNICAL FIELDS SEARCHED (Int.Cl.7) B01F B28C
A	GB 2 065 854 A (MAGNI V) 1 July 1981 (1981-07-01) * the whole document *	6	
A	DE 196 40 740 A (BAYER AG) 23 April 1998 (1998-04-23) * the whole document *	6	
A	US 5 074 057 A (KANAI MASAO) 24 December 1991 (1991-12-24) * the whole document *	6	
-/--			
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 19 September 2002	Examiner Philpott, G
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons a : member of the same patent family, corresponding document	

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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EUROPEAN SEARCH REPORT

Application Number
EP 02 00 6582

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	US 4 971 449 A (HENDREN CHARLES W) 20 November 1990 (1990-11-20) * the whole document *	1	
A	US 2 376 106 A (WITTHOFF CHARLES H) 15 May 1945 (1945-05-15) * figures 2,4 *	3	
A	US 4 664 527 A (SCHULER DORLAND) 12 May 1987 (1987-05-12) * column 5, line 1 - line 2; figures 2,4 *	2,5	
A	FR 912 324 A (BESSODES GILBERT) 6 August 1946 (1946-08-06) * page 2, line 17 - line 29; figure 1 *	2	
A	US 5 249 860 A (BUSCHBOM ELDON F ET AL) 5 October 1993 (1993-10-05) * the whole document *	2,3	
A	US 5 261 744 A (BRUNN RANDY J) 16 November 1993 (1993-11-16) * the whole document *	3	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 19 September 2002	Examiner Philpott, G
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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LACK OF UNITY OF INVENTION
SHEET B

Application Number

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1,5-8

Mixing device with mixing cavity formed between inner and outer shells.

2. Claim : 2

Mixing device comprising an automatic feed/discharge unit connected to the mixer via a rotary joint.

3. Claim : 3

Driving arrangement for a mixing device

4. Claim : 4

Flap door arrangement for a mixing device compartment

5. Claim : 9

Mixing device with mixing cavity formed between inner and outer shells, whereby the inner and outer shells are rotatable in opposite directions

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 02 00 6582

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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19-09-2002

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 3188058 A	08-06-1965	DE 1152875 B GB 950123 A	14-08-1963 19-02-1964
US 4797004 A	10-01-1989	CA 1289134 A1	17-09-1991
DE 19903748 A	28-09-2000	DE 19903748 A1	28-09-2000
GB 1132841 A	06-11-1968	FR 1465170 A	06-01-1967
US 5971602 A	26-10-1999	NONE	
GB 2065854 A	01-07-1981	NONE	
DE 19640740 A	23-04-1998	DE 19640740 A1	23-04-1998
US 5074057 A	24-12-1991	NONE	
US 4971449 A	20-11-1990	CA 2032437 A1	20-06-1991
US 2376106 A	15-05-1945	NONE	
US 4664527 A	12-05-1987	CA 1259984 A1	26-09-1989
FR 912324 A	06-08-1946	NONE	
US 5249860 A	05-10-1993	CA 2065497 A1	16-07-1993
US 5261744 A	16-11-1993	AU 6031194 A CA 2113389 A1 JP 8505565 T WO 9415704 A1 US 5383163 A	15-08-1994 16-07-1994 18-06-1996 21-07-1994 17-01-1995

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82